

Recovery Plan Action Status

Plan Name: Spikedace Recovery Plan

Plan Status: Final

Plan Date: 30-Sep-91

Lead Agency: USFWS

Lead Office: Arizona Ecological Services Field Office

(2602)

242-0210)

| Species | Action Priority # | Action # | Action Description | Action Status | Est. Initiation Date | Est. Completion Date | Responsible Parties | Work Type | Labor Type | Action Comments |
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| Spikedace (Meda fulgida) | 1 | 1.1 | Identify alt populations and determine level of protection | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Fisheries Resources | Research: Population Surveys | Species Expert | Annual surveys conducted by various agency personnel in both Arizona and New Mexico. |
| Spikedace (Meda fulgida) | 2 | 1.10 | Acquire available lands and associated water rights | Not Started | | | U.S. Fish and Wildlife Service, Forest Service , Bureau Land Management , Wildlife Resources | Acquisition | Species Expert | No acquisitions made to date. |
| Spikedace (Meda fulgida) | 2 | 1.11 | Protect acquired lands | Not Started | | | U.S. Fish and Wildlife Service, Forest Service , Bureau Land Management , Wildlife Resources | Acquisition | Species Expert | No acquisitions made to date. |
| Spikedace (Meda fulgida) | 2 | 1.2 | Prioritize populations based on need for protection | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, Desert Fishes Recovery Team | Research: Other Information | Species Expert | Work jointly with the Arizona Game and Fish Department to determine. A Recovery Team has been appointed and will meet in Fall 2011 to address this and other questions. |
| Spikedace (Meda fulgida) | 1 | 1.3 | Designate critical habitat | Ongoing Current | FY 2010 | FY 2012 | U.S. Fish and Wildlife Service | Other: Regulations | Species Expert | The third critical habitat designation was voluntarily remanded, but kept in place until redesignation. A proposed rule was published on October 28, 2010, with a final rule due February 14, 2012. |

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| Spikedace (Meda fulgida) | 1 | 1.4 | Enforce laws and regulations | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Bureau Land Management , Bureau of Reclamation | Management: Other | Species Expert | |
| Spikedace (Meda fulgida) | 1 | 1.5 | Discourage detrimental land and water uses | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Bureau of Reclamation | Management: General | Species Expert | Participate in projects as they develop; currently focused on Gila River Water Rights Adjudication, development of groundwater pumping proposals in the upper Verde River aquifer, as well as other projects. |
| Spikedace (Meda fulgida) | 1 | 1.6 | Insure natural flows | Ongoing Current | FY 2007 | | U.S. Fish and Wildlife Service, Forest Service , Bureau Land Management , Wildlife Resources , Bureau of Reclamation | Management: Planning | Species Expert | No instream flow purchases made to date or identified for purchase. Working with various groups to ensure flows remain in the Verde River and Gila River. |
| Spikedace (Meda fulgida) | 1 | 1.7 | Curtail introductions of non-native fishes | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Fisheries Resources | Management: Predator and Competitor Control | Species Expert | Largely the responsibility of State agencies. Consulting on the sportfish stocking that occurs in Arizona in 2011. |

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| Spikedace (Meda fulgida) | 1 | 1.8 | Identify need for and construct barriers | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Bureau Land Management , Bureau of Reclamation | Management: Habitat Maintenance and Manipulation | Contract | Bureau of Reclamation in charge through Central Arizona Project biological opinion. Barrier feasibility study released for the Verde River. Early NEPA paperwork completed for the Blue River and Spring Creek barriers. Barrier construction completed at Aravaipa Creek, Bonita Creek, and Hot Springs. |
| Spikedace (Meda fulgida) | 2 | 1.9 | Identify available unprotected private lands and water rights | Not Started | | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Wildlife Resources , Desert Fishes Recovery Team | Management: Habitat Maintenance and Manipulation | Species Expert | |
| Spikedace (Meda fulgida) | 1 | 2.1,2.2 | Establish standard monitoring locations and techniques | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Desert Fishes Recovery Team | Research: Population Surveys | Species Expert | Procedures well known; standard locations used in several studies; differing protocols applied based on variation in habitat. Recovery Team, to be appointed FY11, may develop some guidance. |

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| Spikedace (Meda fulgida) | 2 | 2.3 | Establish and maintain computerized database | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, Arizona Game and Fish Department | Management: General | Contract | SONFishes database completed in 1999 under contract with Bureau of Reclamation as part of CAP biological opinion. The Arizona Game and Fish Department maintains the Heritage Database Management System, and provides the FWS with regular updates. The New Mexico Department of Game and Fish has developed and is maintaining a Gila River Basin Rare Fishes database, which they have provided to the FWS. The Recovery Team (appointed; meeting in Fall 2011) may ultimately determine how a central database can be regularly updated and shared with appropriate partners. |
| Spikedace (Meda fulgida) | 1 | 2.4 | Determine natural variation in abundance and age-class structure | Not Started | | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Population Surveys | Species Expert | This work could be completed by any researcher. Not completed to date. |
| Spikedace (Meda fulgida) | 1 | 2.4.1 | Determine standard methods for quantifying abundance | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Population Surveys | Species Expert | Some work completed at Aravaipa Creek. |

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| Spikedace (Meda fulgida) | 1 | 2.4.2 | Conduct bi-annual population estimates | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Population Surveys | Species Expert | Regular surveys completed at Eagle Creek, Aravaipa Creek, the San Francisco River, the Tularosa River, and the upper Gila River and its Forks in New Mexico by various individuals/agencies. The Apache-Sitgreaves National Forests initiated a Blue River survey this year with the goal of developing standard monitoring sites for the Blue. |
| Spikedace (Meda fulgida) | 1 | 2.5,2.5.1,2.5.2 | Monitor community composition including range of natural variation | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Population Surveys | Species Expert | Regular surveys completed at Eagle Creek, Aravaipa Creek, the San Francisco River, the Tularosa River, and the upper Gila River in New Mexico by various individuals/agencies. The Apache-Sitgreaves National Forests initiated a Blue River monitoring effort this year with the goal of developing standardized monitoring sites. |
| Spikedace (Meda fulgida) | 1 | 2.6 | Determine genetic characteristics of existing populations | Partially Complete | Prior to FY 1995 | Prior to FY 1995 | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service | Research: Genetics | Graduate Student | Work completed on spikedace and loach minnow for some streams in Arizona; no new work completed. We have a meeting scheduled with geneticists in August 2010 to develop guidance and answers to specific genetic questions relevant to species management. |

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| Spikedace (Meda fulgida) | 2 | 3.1 - 3.2.2 | Determine significance of interaction with non-native fishes | Ongoing Not Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Competition, Research: Predation | Species Expert | Some research has determined effects in select areas of some predators; additional research completed on some effects of competition. Additional research needed, not on-going at this time. |
| Spikedace (Meda fulgida) | 2 | 4.1 - 4.6 | Quantify effects of physical habitat modification | Not Started | FY 2007 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Habitat Requirements | Species Expert | |
| Spikedace (Meda fulgida) | 2 | 5.1 and 5.2 | Identify management areas and determine necessary habitat improvements | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Desert Fishes Recovery Team | Management: Habitat Maintenance and Manipulation | Species Expert | Ongoing discussions of potential areas for reintroduction. This task will likely be addressed in the new recovery plans, to be revised beginning in FY11/12. |
| Spikedace (Meda fulgida) | 3 | 5.6 | Implement habitat improvement | Ongoing Current | FY 2007 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Management: Habitat Maintenance and Manipulation | Species Expert | Some work completed through barrier construction, as overseen by Bureau of Reclamation in fulfillment of biological opinion requirements on the CAP. Aravaipa, Hot Springs Canyon, and Bonita Creek barriers complete. Work underway for barrier construction on the Verde River, Blue River, and Spring Creek. |

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| Spikedace (Meda fulgida) | 3 | 6.1 | Identify stocks to be used for reintroduction | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, Desert Fishes Recovery Team | Research: Propagation | Species Expert | Bureau of Reclamation leading effort through Arizona Game and Fish Department, as part of compliance with biological opinion on CAP. We play a leadership role in decision-making on stocks to be used in reintroduction efforts. Draft guidance has been developed, and will be refined under newly appointed recovery team which will begin meeting in Fall 2011. |
| Spikedace (Meda fulgida) | 3 | 6.2 - 6.2.5 | Identify and prepare sites for reintroduction | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Desert Fishes Recovery Team | Research: Reintroduction | Species Expert, Volunteer | Working on identification of areas jointly with multiple agencies and in tandem with barrier site analysis. Reintroduction efforts completed at the Muleshoe Preserve, Fossil Creek, Bonita Creek, and the San Francisco River (NM). Proposed projects underway at Blue River and Spring Creek. Additional sites will be identified under the newly appointed Recovery Team scheduled to begin meeting in Fall 2011. |

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| Spikedace (Meda fulgida) | 3 | 6.3 and 6.4 | Reintroduce into selected reaches and monitor | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management | Research: Reintroduction | Species Expert | Reintroduction efforts completed at the Muleshoe Preserve, Fossil Creek, Bonita Creek (AZ), and the San Francisco River (NM). Annual monitoring occurring each Fall with augmentation as needed. |
| Spikedace (Meda fulgida) | 3 | 6.5 and 6.6 | Determine reasons for success/failure and rectify as necessary | Ongoing Current | FY 2007 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Desert Fishes Recovery Team | Management: Reintroduction | Species Expert | Evaluation is the responsibility of team involved in each reintroduction effort. Monitoring occurs at each reintroduction site on an annual basis. Monitoring will occur for 5 years at reintroduction sites, at which point project success/failure will be evaluated, and an assessment developed as to the causes of that success or failure. In FY11, the Muleshoe Native Fishes Management Team met and discussed concerns with the low number of spikedace persisting in Redfield Canyon, and determined this is likely due to drought and reduced flow conditions. Further reintroductions are curtailed until flows resume. |

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| Spikedace (Meda fulgida) | 2 | 7.1 - 7.3.3 | Determine quantitative criteria for describing a self-sustaining population | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Desert Fishes Recovery Team | Research: Reintroduction | Species Expert | Using adaptive management with first reintroduction to develop these criteria. |
| Spikedace (Meda fulgida) | 3 | 8.1 | Select stocks to be used for hatchery brood stock | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Fisheries Resources , Desert Fishes Recovery Team | Research: Propagation | Contract, Species Expert | Bureau of Reclamation supervising contract with Arizona Game and Fish Department. Ecological Services and State wildlife agencies from Arizona and New Mexico work cooperatively, along with personnel from BLM, the Forest Service, and Reclamation on this task. Brood stocks have been identified; prioritization of captive propagation efforts will be developed as part of recovery planning process. Recovery team has been appointed and will begin meeting in Fall 2011. |

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| Spikedace (Meda fulgida) | 3 | 8.2 | Collect hatchery stocks | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Fisheries Resources | Management: Propagation | Contract, Species Expert | Bureau of Reclamation supervising contract with Arizona Game and Fish Department. We are participating in most capture efforts. Hatchery stocks have been collected and brought into captivity for Aravaipa Creek, Blue River, Gila River (NM) and augmented periodically with fish from the wild. Ongoing efforts to obtain stock from the Verde River and Eagle Creek. |
| Spikedace (Meda fulgida) | 3 | 8.3 | Hold and maintain stocks in a hatchery | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, Fisheries Resources | Management: Propagation | Contract, Species Expert | Bureau of Reclamation supervising contract with Arizona Game and Fish Department. New facility constructed in 2007. Captive propagation underway for Blue River, Aravaipa Creek, and Gila River spikedace. |

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| Spikedace (Meda fulgida) | 3 | 8.4 and 8.5 | Evaluate and assess propagation techniques and life-cycle requirements | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Fisheries Resources , Desert Fishes Recovery Team | Acquisition | Contract, Species Expert | Arizona Game and Fish Department completed one report and will continue to assess. We have participated in discussions to refine techniques. Some success with captive propagation in 2008 and 2009. New techniques using raceways has increased captive reproduction success in 2010. An annual meeting is held to discuss the captive propagation facility and priorities for its use. |
| Spikedace (Meda fulgida) | 3 | 8.6 | Supply hatchery reared fish as needed | Ongoing Current | FY 2000 - FY 2004 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Fisheries Resources | Management: Propagation | Contract, Species Expert | Captive propagation underway for fish from Aravaipa Creek, the Gila River, and the Blue River. We have not been able to capture fish from the Verde River or Eagle Creek, but continue surveying those areas, and have capacity at the facility to captively breed fish from those areas should they be obtained. |

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| Spikedace (Meda fulgida) | 2 | 9.1 - 9.1.5 | Provide information and education relative to the species to the public sector | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Public Affairs , Bureau Land Management , Fisheries Resources , Bureau of Reclamation | Other: Information and Education | Species Expert | We have coordinated with the Arizona Game and Fish Department and the SeaLife Aquarium in Tempe. Spikedace will be one of the native species featured in exhibits. SeaLife reports greater than 100,000 visitors per year to the exhibit. Permit review for the facility is underway. |
| Spikedace (Meda fulgida) | 2 | 9.2.1 - 9.2.4 | Ensure all professional information is made available | Ongoing Current | Prior to FY 1995 | | U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, Arizona Game and Fish Department , Forest Service , Bureau Land Management , Fisheries Resources , Bureau of Reclamation | Other: Information and Education | Species Expert | Information is shared with personnel in various agencies as it is developed, usually in the form of gray literature. Some new publications have been developed on species requirements within the last year. |